CE 0051

VACUUM REGULATORS FOR ENDOCAVITARY SUCTION

USER GUIDE

Main Warnings:

Read carefully the following instructions:

- **Do not use grease or oil on the device.**
- **Installation and maintenance must be done by Delta P or by authorized staff.**
- **Use only original spare parts.**
- **Do not sterilize in autoclave. Danger of materials degradation.**
- **Handle carefully the device.**
- **When the device is disused, it must be wasted according to the current standards.**
- **The device must be used only by trained staff.**
- **The device is bounded to be used only with a complete suction system, made by almost one collection jar and an antibacteria filter.**

1. Use destination

The vacuum regulator for endocavitary suction is bounded to control the vacuum supplied by the central distribution units according to the standard EN 737-3.
The connection between the vacuum pipeline system and the regulator is made through a gas-specific interface.
The vacuum regulator is bounded to be used only in a complete suction system, including at least one collection jar and a antibacteria filter.

2. Manufacturer

delta P S.r.l.
Via Mario Castoldi, 5 – 20080 Zibido San Giacomo (MI) - Italy
tel. (+39) 02.9000.5313 fax (+39) 02.9000.5255 e-mail: info@deltap.it internet: www.deltap.it

It is forbidden to copy and distribuite this manual without written permission of **delta P S.r.l.**

3. Technical specifications

3.1 Technical specifications of the regulator:

	VR1000DP	VR600DP	VR250DP
Suction side connection:	G ¼ M		
User-side connection:	Hose connection Ø 9 mm		
Supply negative pressure:	-1000 mbar		
Regulation range:	0 ÷ -970 mbar	0 ÷ -550 mbar	0 ÷ -190 mbar
Max flow-rate:	45 l/min (considering max negative pressure)	45 l/min (considering max negative pressure with a supply negative pressure of -900 mbar)	
Vacuum gauge precision	1.6% V.F.S.		
working temperature:	+5 ÷ +35 °C		
Storing conditions:	-20 ÷ +60 °C		
Moisture:	40% ÷ 80%		
Medium life time:	10 years		

IMPORTANT: in order to prevent the damage of materials or a device malfunctioning caused by bad working/storage condition, follow the instructions written in these tables.

3.2 Optional (provided separetly)

Collecting jar	According to the standard ISO 10079-3
Inlet:	The inlet of the collection jar shall have an inside diameter of not less than 6 mm and not less than the maximum inside diameter of the suction tubing recommended by the manufacturer.
Regulator connection:	Hose connection Ø 9 mm.
Jar connection:	Pipe according to the standard ISO 10079-3, with diameter not less than 6 mm, max length 3 m.
Security device:	There must be an overfill security device in order to prevent that fluids get into intermediate hoses (according to ISO 10079-3). There should be also an antibacterial filter in order to filter the air coming out from the container.

It is forbidden to copy and distribuite this manual without written permission of **delta P S.r.l.**

4. Installation

Warnings:

- *The device is bounded to be installed in centralized systems complying to the european standard EN 737-3.*
- *The regulator must be used only by authorized personnel.*
- *Extract the device from the packaging immediately before the installation.*
- *Handle the device carefully.*
- *The installation must be done before the connection of the device to the patient.*
- *For the following models, VR600DP e VR250DP, a negative pressure relief valve is supplied (7),*
- *Be sure that the exhaust output is not obstructed.*

1. Extract the device from the packaging.
2. Verify the cleaning and the absence of particulate on the connections.
3. Verify the presence of the negative pressure relief valve (7).
4. Connect the exhaust of the regulator (5) to a **gas-specific connection** paying attention to the excessive conjunction strenght.
5. Connect a collection jar, provided by a overfill valve and an antibacterial filter, to the jar-side of the regulator according to the features described into par. 3.2 (4).
6. Go along with the test procedures described at paragraph n° 5.

5. Test

1. Verify that the probe connected to the regulator is gas-specific.
2. Switch on the vacuum generator.
3. Connect the regulator to the vacuum distribution line checking that the ON/OFF button (2) is ON (red side visible).
4. Turn the handwheel completely clockwise (1) (Do not force the handwheel beyond the block point) and verify that the vacuum gauge (3) is measuring null negative pressure.
5. Turn completely counterclockwise the handwheel (1) and verify that the vacuum gauge (3) is measuring the highest negative pressure reachable by the regulator (this value must not exceed the highest value measurable by the vacuum gauge).
6. Turn the handwheel clockwise and stop into any value of negative pressure.
7. Set the ON/OFF button (2) OFF (red side pushed) and verify that the vacuum gauge is measuring null negative pressure.
8. Set the ON/OFF button ON again and (green side pushed) and verify that the vacuum gauge is measuring the negative pressure value measured before the switchings.

6. How to use the regulator

1. Verify that the probe connected to the regulator is gas-specific and verify the integrity of the no return valve (5).
2. Verify that the handwheel (1) is completely screwed (Do not force the handwheel beyond the block point), and that the ON/OFF button red side is pushed down.
3. Connect the regulator to the vacuum distribution line **before the connection to the patient**.
4. Connect a collection container, provided by a overfill valve and a microbiological filter on the “Vaso/Container” side (4).

It is forbidden to copy and distribuite this manual without written permission of **delta P S.r.l.**

5. Push the ON/OFF button green side (2) and regulate the negative pressure using the handwheel (1) (turning the handwheel clockwise the negative pressure decreases, turning the handwheel counterclockwise the negative pressure increases).
6. Be sure that the overfill valve is not accidentally obstructed by any external body (only for VR600DP and VR250DP models).

IMPORTANT: there must be a new antibacteria filter for each patient. (the new antibacterial filter must be used whenever the patient connected to the regulator changes)

It's possible to stop temporarily the suction by acting on the ON/OFF button (2).
At the end of the operations push the ON/OFF button red side (2) and turn completely the hand-wheel (1) clockwise (Do not force the handwheel beyond the block point).

N.B. If any accidental hit occurs, it's necessary a calibration test on the vacuum gauge (3). It's possible to contact delta P for this operation.

7. Maintenance

Warnings:

- *If the performances of the regulator change suddenly, contact delta P.*
- *Maintenance and repairings must be done by delta P or by technical staff authorized by the same firm.*
- *Use only original spare parts by delta P S.r.l.*
- *After maintenance and/or repairs, follow the instructions described into Par.5.*
- *The device must be handled carefully.*
- *A periodical calibration test of the vacuum gauge (3) should be done. (3). For this operation eventually contact delta P.*

In order to maintain an high efficiency, it's necessary to follow this instructions:

- Clean monthly with an softcotton cloth the surface of the device. This cloth must be lightly wet with an appropriate liquid cleaner. Do not use hard alkaline solutions
- Repeat weekly the operations described into par. 5.
- Change yearly the following spare parts:

Code	***Description***
4739-1094	Vacuum gauge 0-1000 mbar (for VR1000DP)
4936-1094	Vacuum gauge 0-600 mbar (for VR600DP)
4937-1094	Vacuum gauge 0-250 mbar (for VR250DP)

Vacuum gauge replacing:

1. *Disconnect the patient from the device and disconnect the device from the vacuum supply system.*
2. *Un screw the vacuum gauge (3) turning it counterclockwise*
3. *Screw the new vacuum gauge*
4. *follow the operations described into par. 5 and 6.*

It is forbidden to copy and distribuite this manual without written permission of **delta P S.r.l.**

8. Drawings

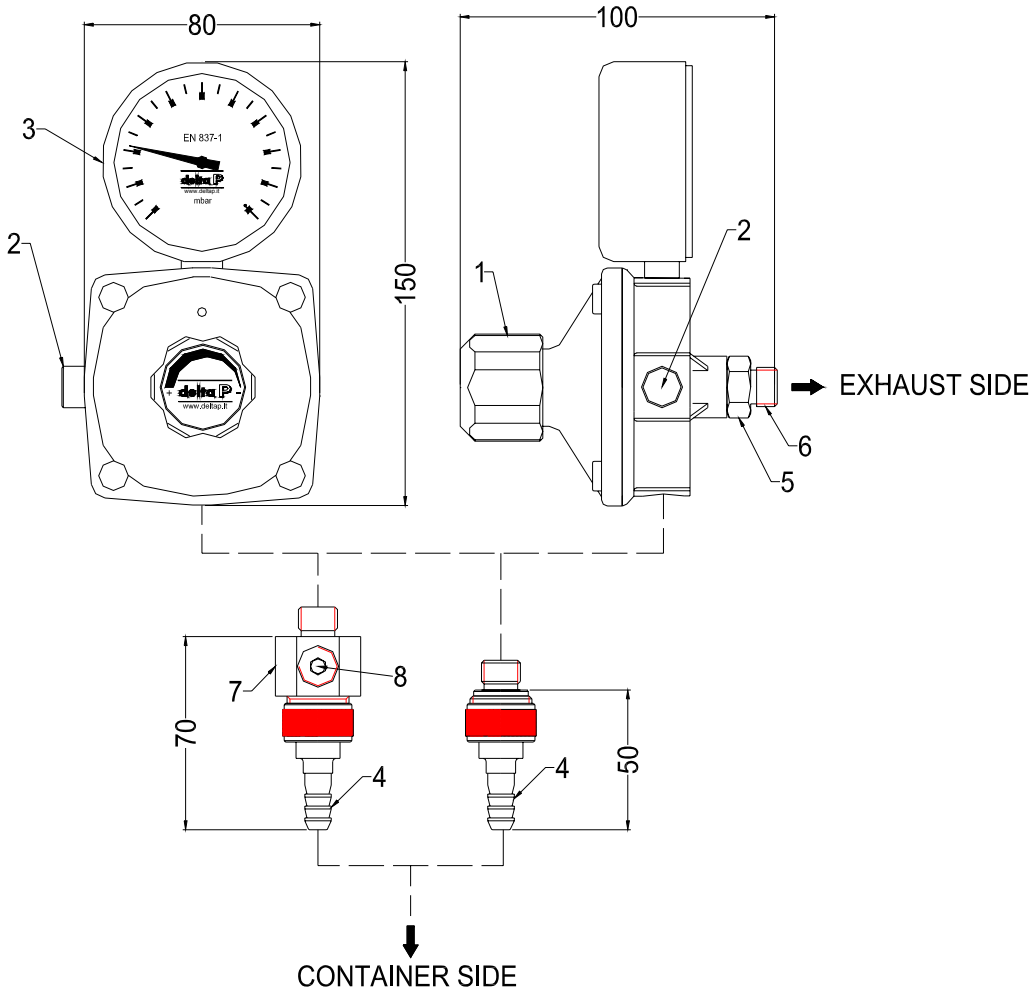

FIGURE 1. – VACUUM REGULATOR

CAPTION:

1. Handwheel.
2. ON/OFF Botton.
3. Vacuum gauge
4. Hose connection.
5. No return valve
6. Connection to the vacuum supply.
7. Negative pressure relief valve
8. Exhaust hole.

9. User guide validity

This guide is suitable for the following product codes:

Code	***Description***
9478-1212	Vacuum regulator G ¼ M - 1000 mbar
9479-1212	Vacuum regulator G ¼ M - 600 mbar
9480-1212	Vacuum regulator G ¼ M - 250 mbar

It is forbidden to copy and distribuite this manual without written permission of **delta P S.r.l.**